

an actuator array operatively associated with said stimulus points for selected application of working fluid thereto to both actuate and modulate body applied pressure at said stimulus points;

a working fluid pressurization, containment and delivery system associated with said actuator array;

a control unit for controlling function of said actuator array; and

a position sensing and feedback unit connected with said control unit to inform said control unit which portion of the virtual display should be tactilely simulated at said stimulus points.

9. The refreshable scanning tactile graphic display apparatus of claim 8 wherein said stimulus points are one of piston operated pins and fluid jets.

10. The refreshable scanning tactile graphic display apparatus of claim 8 wherein said stimulus points are fluid jets, said apparatus further comprising a flexible membrane held over said stimulus points for contact by the localized area of the user's body.

11. The refreshable scanning tactile graphic display apparatus of claim 8 wherein said actuator array includes at least one of a rotational and a linear scanning device for output of working fluid to each of a number of output locations in sequence.

12. The refreshable scanning tactile graphic display apparatus of claim 8 wherein said matrix is any of a flat matrix, a curved matrix or a flexible matrix.

13. The refreshable scanning tactile graphic display apparatus of claim 8 wherein said control unit is microprocessor based and includes program memory.

14. A method for localized sensory stimulation to tactilely simulate a virtual display comprising the steps of:

providing for delivery of stimulus at a high density set of points at a selected body location of a user;

modulating said stimulus delivery at different said points for selective actuation including applying variable differential pressure stimulus at said points; and

controlling said modulation responsive to selected input to control which portion of the virtual display should be tactilely simulated at said points.

15. The method for localized sensory stimulation of claim 14 wherein the step of controlling said modulation includes applying differential force signals to represent tactile information.

16. The method for localized sensory stimulation of claim 14 wherein stimulus delivery is by a working fluid application at said points, the step of controlling modulation of stimulus delivery at different said points including at least one of causing varying pressure of said working fluid before modulating said stimulus delivery, causing selective temporal modulation of working fluid application at said points, and causing selective working fluid throughput operation to each of said points.

17. The method for localized sensory stimulation of claim 14 wherein stimulus delivery is by one of piston operated pins and fluid jets equal in number to said points.

18. The method for localized sensory stimulation of claim 14 wherein stimulus delivery is by piston operated pins, said method further comprising providing a stimulus neutral position for said pins, user's skin elasticity employed to return said pins to said stimulus neutral position.

19. The method for localized sensory stimulation of claim 14 further comprising sensing selected body position information and utilizing said information as said selected input for controlling said modulation to thereby control speed and direction of virtual display scanning.

20. The method for localized sensory stimulation of claim 14 wherein said set of points at a selected body location of a user includes about 400 stimulus points in about one square centimeter.

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